

Title (en)  
 FREQUENCY AND TIME DOMAIN MULTIPLEXING FOR LOW PEAK-TOAVERAGE POWER RATIO (PAPR) WAVEFORM DESIGN WITH MULTIPLE STREAMS

Title (de)  
 FREQUENZ- UND ZEIT-DOMAIN MULTIPLEXING FÜR EIN WELLENFORM-DESIGN MIT NIEDRIGEM SPITZEN-ZU-DURCHSCHNITTlichen LEISTUNGSVERHÄLTNIS (PAPR) MIT MEHREREN STRÖMEN

Title (fr)  
 MULTIPLEXAGE EN FRÉQUENCE ET DANS LE DOMAINE TEMPOREL POUR UNE CONCEPTION DE FORME D'ONDE À RAPPORT DE PUISSANCE À FAIBLE PUISSANCE (PAPR) AVEC DE MULTIPLES FLUX

Publication  
**EP 3574618 B1 20220223 (EN)**

Application  
**EP 18701876 A 20180108**

Priority  
 • US 201762451007 P 20170126  
 • US 201715674428 A 20170810  
 • US 2018012812 W 20180108

Abstract (en)  
 [origin: US2018212810A1] Methods, systems, and devices for wireless communications are described that support frequency and time domain multiplexing for low peak-to-average waveforms with multiple streams. A user equipment (UE) may identify sets of symbols associated with different streams (e.g., multiple single-carrier discrete Fourier transform (DFT)-spread waveforms), where each stream may be associated with a low peak-to-average power ratio (PAPR). In some cases, different waveforms may be mapped to subsets of frequency resources through frequency division multiplexing (FDM). The UE may further reduce the PAPR of the multiplexed waveforms by performing time division multiplexing (TDM) across the single-carrier streams, and sets of symbols that are not used by one waveform may be used by another waveform. Frequency domain phase ramps may be applied to align the multiplexed waveforms. Signals included in an uplink transmission according to these techniques may maintain properties similar to single-carrier waveforms, including a low PAPR.

IPC 8 full level  
**H04L 27/26** (2006.01); **H04B 7/26** (2006.01); **H04L 5/00** (2006.01)

CPC (source: EP KR US)  
**H04B 7/2615** (2013.01 - EP KR); **H04L 5/001** (2013.01 - KR); **H04L 5/0037** (2013.01 - KR); **H04L 5/005** (2013.01 - KR); **H04L 27/261** (2013.01 - KR); **H04L 27/2614** (2013.01 - EP US); **H04L 27/2621** (2013.01 - EP KR US); **H04L 27/2636** (2013.01 - EP KR US); **H04B 7/2615** (2013.01 - US); **H04J 2011/0009** (2013.01 - EP KR US); **H04J 2011/0013** (2013.01 - EP KR US); **H04L 5/001** (2013.01 - EP US); **H04L 5/0037** (2013.01 - EP US); **H04L 5/0048** (2013.01 - EP US); **H04L 5/005** (2013.01 - EP US); **H04L 27/262** (2013.01 - EP US)

Citation (examination)  
 • FRED HARRIS ET AL: "Non iterative techniques for low peak-to average power ratio OFDM signals", WAVEFORM DIVERSITY AND DESIGN CONFERENCE, 2009 INTERNATIONAL, IEEE, PISCATAWAY, NJ, USA, 8 February 2009 (2009-02-08), pages 296 - 301, XP031436546, ISBN: 978-1-4244-2970-7  
 • IBRAHIM MOSTAFA ET AL: "Zero Tail Filter Bank Spread OFDM", MILCOM 2016 - 2016 IEEE MILITARY COMMUNICATIONS CONFERENCE, IEEE, 1 November 2016 (2016-11-01), pages 688 - 693, XP033028217, DOI: 10.1109/MILCOM.2016.7795408

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**US 10567205 B2 20200218**; **US 2018212810 A1 20180726**; AU 2018213860 A1 20190704; AU 2018213860 B2 20210107; BR 112019015013 A2 20200407; CA 3047827 A1 20180802; CA 3047827 C 20230117; CN 110199507 A 20190903; CN 110199507 B 20220318; EP 3574618 A1 20191204; EP 3574618 B1 20220223; JP 2020505840 A 20200220; JP 6890665 B2 20210618; KR 102216491 B1 20210216; KR 20190107672 A 20190920; TW 201828638 A 20180801; TW I726186 B 20210501; WO 2018140222 A1 20180802

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